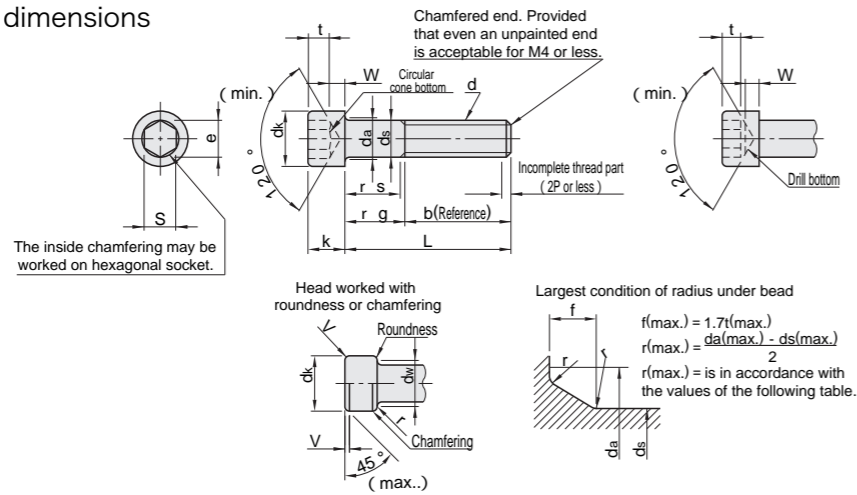


(Technical Data) Socket Head Cap Screws

Excerpt from JIS B 1176(1988)

1. Shapes and dimensions



Unit: mm

Nominal diameter of thread (d) ⁽¹⁵⁾	M3	M4	M5	M6	M8	M10	M12	(M14)	M16	(M18)	M20	(M22)	M24	(M27)	M30	
Pitch of screw thread(P)	0.5	0.7	0.8	1	1.25	1.5	1.75	2	2	2.5	2.5	2.5	3	3	3.5	
b	Reference	18	20	22	24	28	32	36	40	44	48	52	56	60	66	72
dk	Max. (Basic size)*	5.5	7	8.5	10	13	16	18	21	24	27	30	33	36	40	45
	Max. **	5.68	7.22	8.72	10.22	13.27	16.27	18.27	21.33	24.33	27.33	30.33	33.39	36.39	40.39	45.39
	Min.	5.32	6.78	8.28	9.78	12.73	15.73	17.73	20.67	23.67	26.67	29.67	32.61	35.61	39.61	44.61
da	Max.	3.6	4.7	5.7	6.8	9.2	11.2	13.7	15.7	20.2	22.4	24.4	26.4	30.4	33.4	
ds	Max. (Basic size)	3	4	5	6	8	10	12	14	16	18	20	22	24	27	30
	Min.	2.86	3.82	4.82	5.82	7.78	9.78	11.73	13.73	15.73	19.67	21.67	23.67	26.67	29.67	
e	Min.	2.87	3.44	4.58	5.72	6.86	9.15	11.43	13.72	16.00	16.00	19.44	19.44	21.73	21.73	25.15
f	Max.	0.51	0.60	0.60	0.68	1.02	1.02	1.45	1.45	1.45	1.87	2.04	2.04	2.04	2.89	2.89
k	Max. (Basic size)	3	4	5	6	8	10	12	14	16	18	20	22	24	27	30
	Min.	2.86	3.82	4.82	5.70	7.64	9.64	11.57	13.57	15.57	17.57	19.48	21.48	23.48	26.48	29.48
r	Min.	0.1	0.2	0.2	0.25	0.4	0.4	0.6	0.6	0.6	0.6	0.8	0.8	0.8	1	1
s	Nominal designation (Basic size)	2.5	3	4	5	6	8	10	12	14	14	17	17	19	19	22
	Min.	2.52	3.02	4.02	5.02	6.02	8.025	10.025	12.032	14.032	14.032	17.050	17.050	19.065	19.065	22.065
	Max. ⁽¹⁴⁾	Column 1	2.580	3.080	4.095	5.140	6.140	8.175	10.175	12.212	14.212	14.212	17.230	17.230	19.275	19.275
Column 2	2.560	3.080	4.095	5.095	6.095	8.115	10.115	12.142	14.142	14.142						
t	Min.	1.3	2	2.5	3	4	5	6	7	8	9	10	11	12	13.5	15.5
v	Max.	0.3	0.4	0.5	0.6	0.8	1	1.2	1.4	1.6	1.8	2	2.2	2.4	2.7	3
d _w	Min.	5.07	6.53	8.03	9.38	12.33	15.33	17.23	20.17	23.17	25.87	28.87	31.81	34.81	38.61	43.61
w	Min.	1.15	1.4	1.9	2.3	3.3	4	4.8	5.8	6.8	7.7	8.6	9.5	10.4	12.1	13.1

Notes⁽¹⁴⁾ The column 1 of s (max.) shall apply to cap screws of 8.8 and 10.9 in strength division and those of A 2-50 and A 2-70 in property division. The column 2 shall apply to cap screws of 12.9 in strength division. Provided that the column 1 can apply to those of 12.9 in strength division in accordance with the agreement between the purchaser and the manufacturer. Furthermore, the s (max.) of M 20 and over in nominal designation of screw thread shall apply to all of cap screws strength division and property division.

Notes⁽¹⁵⁾ Cap screws having a nominal designation appended with parentheses shall not be used as far as possible.

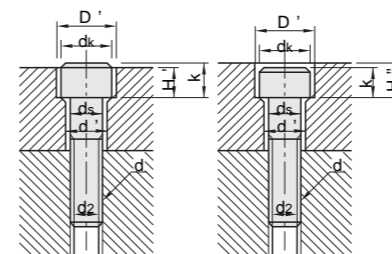
- Remarks
- The flank of head part shall be appended with a knurl (see JIS B 0951) of paralleled or crossed. In this case, dk (max.) shall be the value of * * given in this table. Furthermore, where the cap screws without knurl are required, the orderer shall specify it. Provided that dk (max.) shall be the value of * * given in this table.
 - The nominal length (R) recommendable to the nominal designation of screw thread shall be within the frame of bold lines. Furthermore, the cap screws shorter than the position of dotted line in nominal length R shall be whole threads and the length of the incomplete thread at the underhead part shall be approx. 3 P.
 - The Rg (max.) and Rs (min.) for the cap screw, of which the nominal length (R) is longer than the position of dotted line, shall be in accordance with the following formula :
 $Rg(max.) = \text{Nominal length}(R) - b$
 $Rs(min.) = Rg(max.) - 5P$

2. L, R_s and R_g of socket head cap screw

Unit: mm

Nominal diameter of thread (d)	M3		M4		M5		M6		M8		M10		M12		(M14)		M16		(M18)		M20		(M22)		M24		(M27)		M30	
	L	r	s	min	max	r	s	min	max	r	s	min	max	r	s	min	max	r	s	min	max	r	s	min	max	r	s	min	max	
5	4.76	5.24																												
6	5.76	6.24																												
8	7.71	8.29																												
10	9.71	10.29																												
12	11.65	12.35																												
16	15.65	16.35																												
20	19.58	20.42																												
25	24.58	25.42	4.5	7																										
30	29.58	30.42	9.5	12	6.5	10	4	8																						
35	34.5	35.5			11.5	15	9	13	6	11																				
40	39.5	40.5			16.5	20	14	18	11	16	5.75	12																		
45	44.5	45.5					19	23	16	21	10.75	17	5.5	13																
50	49.5	50.5					24	28	21	26	15.75	22	10.5	18	5.25	14														
55	54.4	55.6																												
60	59.4	60.6																												
65	64.4	65.6																												
70	69.4	70.6																												
80	79.4	80.6																												
90	89.3	90.7																												
100	99.3	100.7																												
110	109.3	110.7																												
120	119.3	120.7																												
130	129.2	130.8																												
140	139.2	140.8																												
150	149.2	150.8																												
160	159.2	160.8																												
180	179.2	180.8																												
200	199.05	200.95																												
220	219.05	220.95																												
240	239.05	240.95																												
260	258.95	261.05																												
280	278.95	281.05																												
300	298.95	301.05																												

Reference Dimensions of counterboring and bolt hole for the socket head cap screws



Nominal diameter of thread (d)	M3	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24	M27	M30
d _s	3	4	5	6	8	10	12	14	16	18	20	22	24	27	30
d'	3.4	4.5	5.5	6.6	9	11	14	16	18	20	22	24	26	30	33
dk	5.5	7	8.5	10	13	16	18	21	24	27	30	33	36	40	45
D'	6.5	8	9.5	11	14	17.5	20	23	26	29	32	35	39	43	48
K	3	4	5	6	8	10	12	14	16	18	20	22	24	27	30
H'	2.7	3.6	4.6	5.5	7.4	9.2	11	12.8	14.5	16.5	18.5	20.5	22.5	25	28
H''	3.3	4.4	5.4	6.5	8.6	10.8	13	15.2	17.5	19.5	21.5	23.5	25.5	29	32
d ₂	2.6	3.4	4.3	5.1	6.9	8.6	10.4	12.2	14.2	15.7	17.7</				